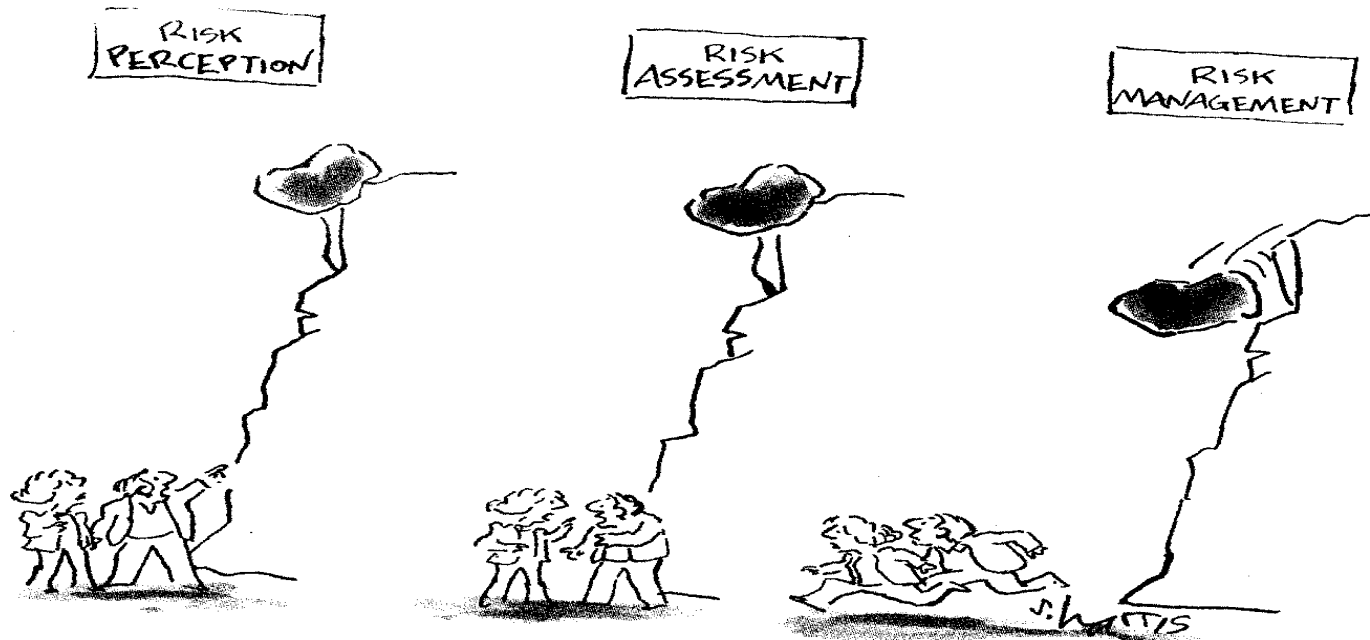


Operational Risk Management



References

- MCO 3500.27B Operational Risk Management
- FM 100-14 Risk Management
- OPNAVINST 3500.39B ORM



ORM Enabling Objectives

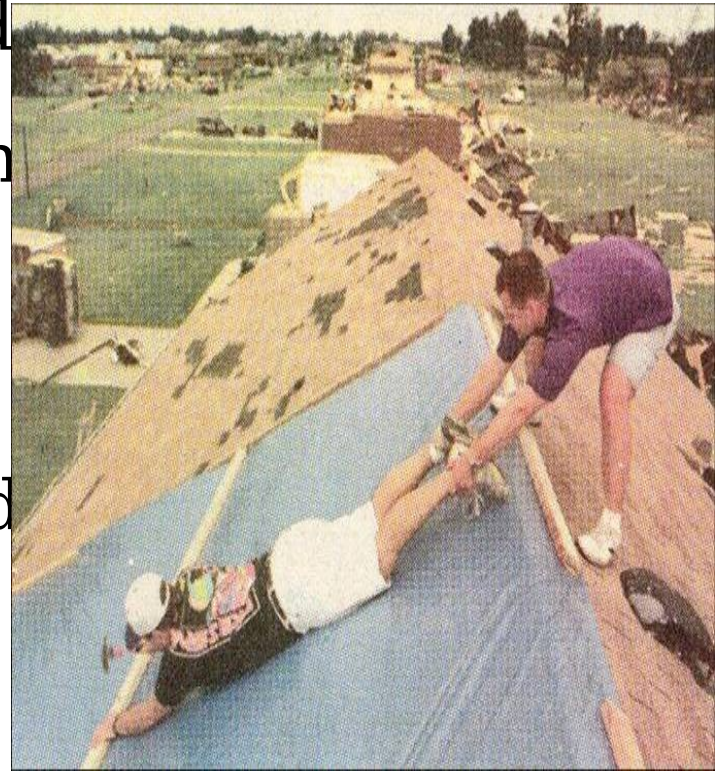
- State the purpose of ORM and how it works
- Be familiar with ORM origin
- State the saving ORM can provide
- Define the critical terms of ORM
- Discuss the 3 levels of application
- Discuss and apply the 5 steps of ORM
- Define risk management
- Define risk assessment
- State the goals of risk management
- State the 4 principles “Golden Rules” of ORM
- Apply the 5 steps of ORM using the risk management worksheet

Purpose of ORM

- The purpose of ORM can be defined as enhancing hazard identification in the operational environment in order to eliminate risks or reduce them to an acceptable level
- ORM follows a 5 step sequence, with 3 levels of application
- It's a closed-loop process applicable to most operational and organizational situations and environments

Implementing ORM

- CG MCCDC: Developed curricula and incorporated instruction in each level of leadership training, GMT, and other appropriate classes
- Integrated into ITSs and MCCRE
- Address ORM in appropriate doctrinal publications



Benefits out-way the risk?

Implementing ORM cont.

- MEF Commanders
 - Provide ORM into operations, exercises, and training
 - Address ORM in post exercise/operation reports
- Unit Commanders
 - Provide ORM training to personnel
 - Incorporate ORM into briefs/planning



Benefits out-way the risk

ORM Off Duty

- Applying ORM only on-duty is like putting a band aid on a severed leg!
- Command oversight with involved leadership at all levels and creative intervention CAN and WILL prevent off-duty mishaps



Basic Hazard Identification Tools

- **Operational analysis tools**
 - Flow charts
 - Data worksheet
 - Risk Assessment Matrix
 - Affinity diagram

Risk Assessment Matrix



Risk Assessment Code

1 = Critical

2 = Serious

3 = Moderate

4 = Minor

5 = Negligible

		Probability of Occurrence			
		Likely	Probably	May	Unlikely
		A	B	C	D
S E V E R I T Y	Cat I	1	1	2	3
	Cat II	1	2	3	4
	Cat III	2	3	4	5
	Cat IV	3	4	5	5
		Risk Levels			

Affinity Diagram

- Technique: A problem or issue is defined into categories to focus patrons “brainstorming” on one aspect of a problem at a time
- Application: Operational Analysis and Preliminary Hazard Analysis
- Methodology:
 - Define the issue
 - Separate the issues into phases/categories

Affinity Diagram cont.

MAINTENANCE

Parts

Maintenance
manuals

Interface w/others
equipment

TRAINING

Key
personnel

Maintenanc
e

Testing

OPERATIONS

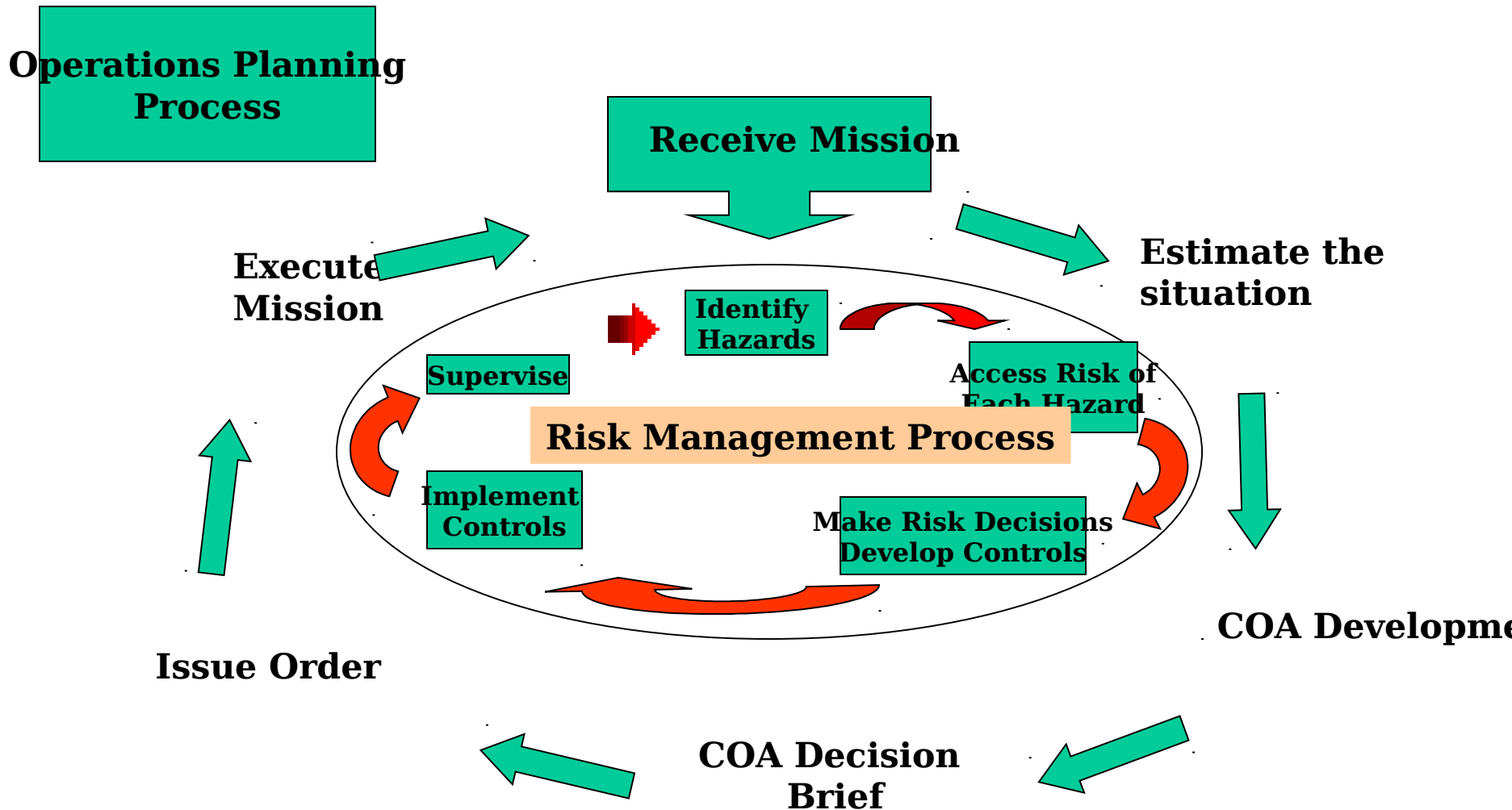
Emergency
procedures

Use of equipment

Tracking of quals

RISK MANAGEMENT INTERGRATION

AND THE MILITARY DECISION MAKING PROCESS



Origin of ORM

- 1978 Bob Firenze, a Navy civilian wrote an article for the Naval Safety Center's Lifeline magazine identifying Risk Management and its benefits in industrial work place.
- 1991 the Army began working ORM into briefs, schoolhouses and Operational Planning. Since then, ORM has become the Army's primary risk reduction process to protect the force. Their goal is "to make risk management a routine part of planning and executing operational missions".

Historical

- What does the absence of ORM cost the Marine Corps?
- FY 99 (when ORM started in the Marine Corp) Marine Corps' total cost for Aviation and Ground Mishaps

\$330,593,547.00

What Mishaps Cost

- TOTAL \$330,593,546
- Per Month \$27,549,462
- Per Week \$6,357,568
- Per Day \$905,735
- Per Hour \$37,739
- Per Minute \$629
- Per Second \$10.50

“ORM supports mission accomplishment and troop welfare”



Risk Comparison

TRADITIONAL

ORM

Random, Individual Dependent
Systematic

Common Sense
Methodical

Uninformed Decision
Informed

Reactive

Proactive

Definitions

- **ORM**

- The process of dealing with risks associated with military operations, which includes risk assessment, risk decision making and implementation of effective risk controls
- A **tool** used to help leaders make sound decisions in a logical manner in order to manage IDENTIFIED RISKS

Definitions cont.

- **Active Failures** (2 types)
 - Actions
 - Inactions
- **Latent Failures** (3 types)
 - Organizational Influence
 - Unsafe Supervision
 - Precondition for Unsafe Acts

Cause Factors

- ***Human Error*** - an individual's actions or performance is different than what is required and results in or contributes to an accident.
- ***Material Failure/Malfunction*** - a fault in the equipment that keeps it from working as designed, therefore causing or contributing to an accident.
- ***Environmental Conditions*** - any natural or manmade surroundings that negatively affect performance of individuals, equipment or materials and causes or contributes to an accident.

Sources of Human Errors

Individual Failure - Personnel knows and is trained

to standards but elects not to follow the standard

Leader Failure - Leader does not enforce known standard.
(self-discipline).

Training Failure - Personnel not trained to known standard (insufficient, incorrect or no training on task).

Standards Failure -

Standards/procedures not clear or practical, or do not exist

Support Failure - Equipment/material improperly designed to meet performance standards.

Definitions cont.

- **Probability**

- The likelihood that a hazardous incident will occur

- **Severity**

- Expected consequence of an event in terms of degree of injury, illness, property damage, or other mission-impairing factor (loss of combat power)

Definitions of Probability

Frequent: Occurs often in career/equipment service life

Likely: Occurs several times in career/equipment service life

Occasionally: Occurs sometime in career/equipment service life

Seldom: Possible to occur in career/equipment service life

Unlikely: Can assume will not occur in career/equipment service life

Definitions of Severity

Catastrophic: Death or permanent total disability, system loss, major property damage

Critical: Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage

Moderate: Minor injury, lost workday accident, compensable injury or illness

Negligible: First Aid or minor supportive medical treatment, minor system

Risk Assessment Matrix



Risk Assessment Code

1 = Critical

2 = Serious

3 = Moderate

4 = Minor

5 = Negligible

		Probability of Occurrence			
		Likely	Probably	May	Unlikely
		A	B	C	D
S E V E R I T Y	Cat I	1	1	2	3
	Cat II	1	2	3	4
	Cat III	2	3	4	5
	Cat IV	3	4	5	5
		Risk Levels			

Definitions cont.

- **Danger**

- Is a threat to health or safety of humans.
It is the threat of harm

- **Safe**

- Absence of danger

- **Safety**

- The effort to reduce the threat of harm in an intended incident or sequence of events

Definitions cont.

- **Variance**

- Deviation and errors that have a negative impact on an evolution

- **Hazard**

- A condition with the potential to cause personal injury or death, property damage or mission degradation

Definitions cont.

- **RISK**

- An expression of possible loss in terms of severity and probability

- **Cause**

- Something that produces an effect, result, or consequence
- The person, event, or condition responsible for an action or result

Definitions cont.

- **Accident**

- An unplanned incident in which danger, the threat of harm, has actually produced harm

- **Mishap**

- A somewhat gentle euphemism “collateral damage” for the violence in an accident

Definitions cont.

- **Risk Assessment**

- The process of detecting hazards and assessing associated risks



A strategy to identify HAZARDS and THREATS and place them in perspective relative to the MISSION or TASK at hand

ORM Goals

- Ensure mission accomplishment
- Enhance efficiency & effectiveness of all command personnel in the performance of the mission
- Enhance Units force protection



4 Principles “ORM Golden Rules”

1. Accept risk when benefits outweigh the costs
2. Accept no unnecessary risk
3. Anticipate and manage risk by planning
4. Make risk decisions at the right level

ORM 5 Steps & BAMCIS

Parallels the 6 Troop Leading Steps

*** ORM Steps**

BAMCIS

1. Identify Hazards
Planning

- Begin

- Arrange

Recon

2. Assess Hazards
Make Recon

-

3. Make Risk/Hazard Decisions
Complete the Plan

-

3 Levels of Application

- **Time Critical**
 - On the run consideration
- **Deliberate**
 - Application of the 5 Step Strategy
- **In-depth**
 - Complete the 5 Step Strategy with detailed analysis, battle plans, joint OPS, etc.

Risk Management Process

- Does
 - Conserves lives/resources
 - Assist in decision making
 - ID feasible/effective control measures
 - Provide reasonable alternatives

Risk Management Process

- Does not
 - Inhibit flexibility/initiative
 - Remove risk altogether
 - Require a GO/NO-GO decision
 - Endorse violation of laws
 - Take the place of other control measures i.e. orders, rehearsals

5 Steps of ORM

1. **Identify Hazards:** by viewing METT-S&L facts of the mission/task
 - This is about enemy, terrain, weather, troops, equipment, and time
 - Sources of METT-S&L facts and historical hazards include mission/task instructions, recon, experience of leaders and troops, Unit SOPs, Unit's accident history, etc.
 - Objective is to identify **all** risks and hazards that are most likely to result in

Step 1 Identify Hazard

- Conduct and Operational Analysis
 - List major steps of the operation
- Conduct a Preliminary Hazard Analysis
 - List the hazards associated with each step
 - List the possible causes of the hazards

Example of Conduct and Operational Analysis

- List major steps of the operation (Weekend trip to a championship game)
- Operation Analysis
 - Drive to the game
 - Attend the game
 - Drive back home

Conduct a Preliminary Hazard

Hazard

- **Motor vehicle mishap**

Analysis Causes

Fatigue
Road hazard
Weather
Night
Speeding

Cause

Poor maintenance

Cause

Poor condition of tire

Improper inflation

Road hazard

Hazard

- **Car problem**

Hazard

- **Flat tire**

Conduct a Preliminary Hazard

Hazards

- Out of gas

Analysis Causes

Poor planning

Hazards

- Lost

Causes

Unfamiliar with
route

Hazards

- Late

Causes

Traffic
Construction
Weather

Conduct a Preliminary Hazard

Hazards **Analysis** **Causes**

- **Fight**

Alcohol
Attitude

Hazards

- **Dehydration or Hypothermia**

Causes

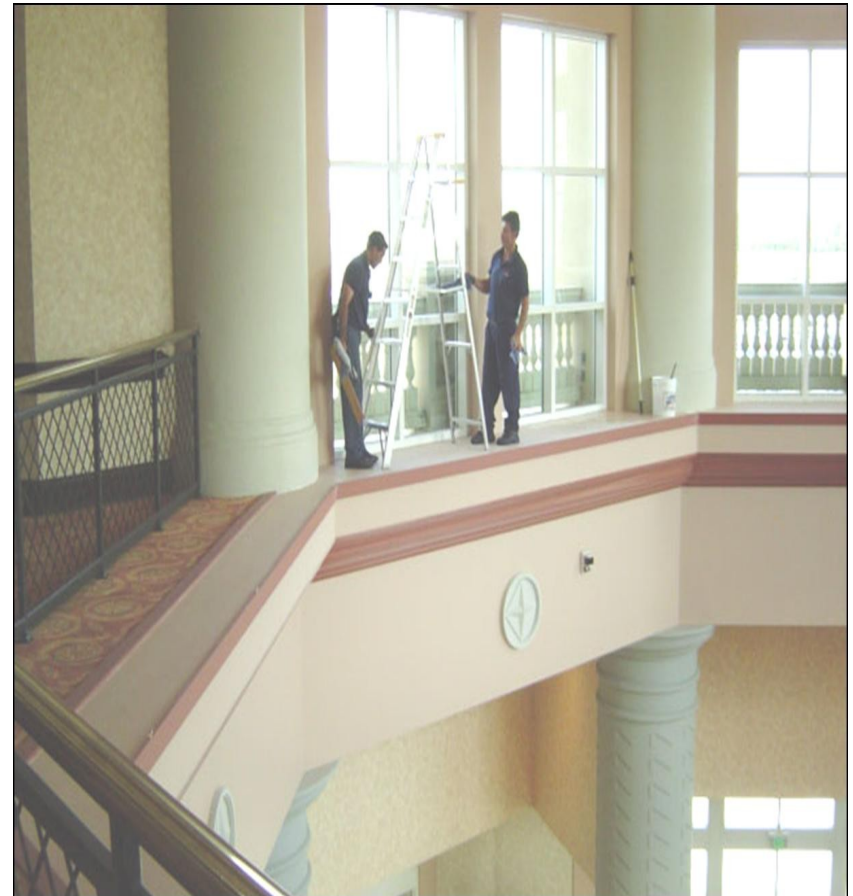
**Exposure to heat
or cold**

5 Steps of ORM cont.

2. Assess hazards

- Determine the risk of each hazard by applying the assessment matrix included in these instructions

- The risks/hazards are identified as Low, Moderate, High, or Extreme



Benefits out-way the risk

Assess Mishap Probability

- Historical data
- Intuitive analysis (brain storming)
- Judgment
- Tool

Determine the RAC

- Vehicle crashes and kills person
- Fight results in severe injury
- Minor car damage or minor injury from flat tire

Severity + Probability of
occurrence=RAC

Severity	Probability	RAC
I	B	1
II	B	2
III	C	4

5 Steps of ORM cont.

3. **Make risk decisions**

- For each hazard, develop one or more controls to eliminate or reduce the risk specifying the who what, when and how of each control
- Determine Mission/Task overall risk: for each hazard use the risk assessment matrix included in these instructions to determine the level of risk remaining after the controls are implemented
- Use procedures outlined in Unit SOPs
 - If the Unit SOP does not have procedures to determine overall mission/task risk, this risk level is the same as the hazard with the highest residual risk

Step 3: Make Risk Decisions

- **Accept the risk**
- **Avoid the risk**
- **Reduce the risk**
- **Spread the risk**

Make Risk Decisions

- Develop controls
- Determine residual risk
- Make Risk Decision
- Communicate w/higher authority
 - Risk > Benefit
 - Risk exceed the Commander's stated intent
 - Help is needed to implement controls

Risk Control Options

- Engineering
 - ✓ New Technology, design, substitute material
- Education
 - ✓ Collective/individual training
- Administrative
 - ✓ Establishing written programs, limiting exposure
- Physical
 - ✓ Barriers, PPE, road guards, warning signs
- Operational

Develop Controls

- Vehicle mishap
- Lost
- Late
- Car Problems
- Fight w/fan
- Dehydration
- Flat tire
- Out of Gas

Develop Controls

- Vehicle mishap
 - Proper rest, plan route, prep vehicle, leave early, driver training, Don't drink and drive
- Lost
- Late
- Car problems
 - Get map of area
 - Leave early, plan route
 - Op check vehicle

Develop Controls

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Avoid confrontation
- Bring proper clothing
- Check tires, drive slower, delay trip, follow route plan
- Op check

5 Steps of ORM cont.

4. **Implement controls**

- For each control, enter how the control will be put into effect and/or communicated to personnel who will make it happen.

Example: Verbal orders, SOPs, OPORD, rehearsals

- Engineering Controls
- Administrative Controls
- Personal Protective Equipment

Implement Controls

- Vehicle mishap
- Lost
- Late
- Car problems
- Develop SOPs, Policy Letters, Trip plans, Leave request
- Require possible routes for trips
- Set travel times, verbal orders
- Create vehicle checklists, make repairs

Implement Controls

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Stay together
- Check each other
- Require vehicle repair, periodic checks, spare tire and equipment
- Put gas in the vehicle

5 Steps of ORM cont.

5. **Supervise and evaluate**

- For each control, enter how each control will be monitored to ensure it is implemented, i.e. direct supervision, continuous supervision, spot checks, situation reports, inspections, buddy system, or personal self-discipline
- After the mission/task is completed determine the effectiveness of each control in reducing the risk of the targeted hazard

Supervise

- Vehicle mishap
- Lost
- Late
- Car problems
- Direct and continuous
- Direct and continuous, buddy system
- Personal self-discipline, buddy system
- Spot check, inspections

Supervise

- Fight w/fan
- Dehydration or Hypothermia
- Flat tire
- Out of gas
- Buddy system
- Buddy system, self-discipline
- Spot checks, buddy system, inspections
- Spot checks, buddy system, inspections

Supervise - HOW

- Monitor and Enforce controls
- Use evaluation techniques to look for new hazards
- Examine data/make adjust that are ineffective
- Evaluate effectiveness of controls and revise if necessary

Evaluation Tools

- Spot Checks/Back Briefs
- Audits/Inspections
- Readiness Reports
- Licensing
- Rehearsals

Create Groups

Risk Management Scenario

- 1. Infantry**
- 2. Armor**
- 3. Aviation**
- 4. Air Defense Artillery**
- 5. Field Artillery**
- 6. Corps of Engineers**
- 7. Transportation**
- 8. Refuel on the move**
- 9. Tactical Road march**
- 10. Live fire**

LEAVE/LIBERTY OPERATIONAL RISK ASSESSMENT WORKSHEET

ORGANIZATION:	2d Medical Battalion, 2d MLG			SECTION:	S-4		
EVENT DESCRIPTION:	Liberty trip to AFC Football Game			EVENT DATE(S):	January 2007		
PREPARED BY:	Sgt John C. Smith			DATE:	January 2007		
IDENTIFY HAZARDS			ASSESS HAZARDS	MAKE RISK DECISIONS		IMPLEMENT CONTROLS	SUPERVISE
Operation Plan	Hazards	Causes	Initial RAC	Develop Controls	Residual RAC	How to Implement	How to Supervise
Drive to game	Motor Vehicle Mishap	Car problems	3	Op Check auto	4	Make repairs Get maps/travel package Request early liberty add tire chains	Owner/operator "A" Driver Senior Marine request perm
Attend game		Construction	3	Plan route	4		
		Bad weather	2	Leave early/ prep auto	3		
Drive home	Fight Dehydration	Fight w/ fans	2	Avoid confrontation	3	Stay together	Team effort
		Hypothermia	2	Bring warm clothes	3	Check each other for proper clothing	Team effort
Drive home	Motor Vehicle Mishap	Fatigue	2	Swap drivers	3	Rotate drivers every 2 hours DD's identified prior to departure	Senior man
		DUI	2	Designated Drivers	3		DD's
	Car problems	Bad weather	2	Increase following distance/ prep auto	3	Get WX reports Designate rest stops auto serviced and inspected	"A" driver Senior man
		Poor Maintenance	3	Op check auto	3		Owner/operator
Supervisor's Notes:							
Supervisor's Signature:					Date:		

In preparation for an amphibious exercise, a deck officer uses ORM to plan for launching small boats:

a. Step 1 - Identify Hazards

Operational Analysis:

Muster deck watch section

Brief

Man launch positions

Attach lines and Load boats

Move boats over water and lower

Detach lines and retrieve

Small boats move away from ship

Stow lines

Muster deck watch section

For each step of the operational analysis, list any hazards which might result in personnel injury/death, property damage or mission degradation:

- **Hazards**

- **Personnel slips/falls**
- **Time/position requirements confused**
- **Boat overloaded**
- **Improperly attached lines**
- **Lost control of boats(resulting in death/injury, damage or delay/abort of launch)**
- **Man overboard**
- **Lines tangled/knotted**
- **Small boats unable to break away from the ship**

- **Causes**

- **Wet deck, gear adrift, rushing**
- **Incomplete/inaccurate**
- **Inadequate training, crew complacency**
- **Same as above**
- **Material Casualty (davit crane or harness failure) High sea state, improper procedures (winch, davit operation), improper positioning (boat crew and boat)**
- **Same as above**
- **Same as above, improperly attached lines**
- **Small boat engine failure, suction effect from ship**

Summary

Enhances operational mission accomplishment

Supports well-informed decision making to implement a COA.

Provides assessment tools to support operations.

Improves decision making skills based on a systematic approach..

ONLINE SITES

- Safety Division;
<http://hqinet001.hqmc.usmc.mil/sd/documents.htm>
- Navy Safety Center;
<http://www.safetycenter.navy.mil/ashore/marines/default.htm>
- Marine Corps ORM site;
<https://crcapps2.crc.army.mil/ASMIS2/marines/login.aspx?ReturnUrl=%2fASMIS2%2fmarines%2fdefault.aspx>

A photograph of a man performing a handstand in a public square. The man is dark-skinned and wearing a patterned dhoti. He is balancing on his head with his legs raised high in the air. Several people are standing around him, watching. In the background, there are stone steps and a building. The text "Questions?" is overlaid in large red letters at the top. The text "Practical Application" is overlaid in large red letters in the middle. The text "Benefits out-way the risk" is overlaid in black letters at the bottom right.

Questions?

Practical Application

Benefits out-way the risk